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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,946	02/28/2002	Ray L. Pickup	10012968 -1	7672

7590 02/08/2005

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EXAMINER	
LIANG, LEONARD S	

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/086,946	PICKUP, RAY L.	
	Examiner	Art Unit	
	Leonard S Liang	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 December 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,14-23,29-38,40-46,49-54 and 57-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,14-17,19-23,29-38,40-44,46,49-52,54 and 57-59* is/are rejected.

7)☒ Claim(s) *18,45 and 53* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 47-48 and 55-56 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Species I directed to figure 4 was previously elected.

This application contains claims directed to the following patentably distinct species of the claimed invention:

Species IA directed to a print mechanism, wherein the print surface is passed through the printzone in a first longitudinal direction, wherein the print surface has a central region and a lateral edge and wherein airflow from the pressurized air source has a directional component directed at the first surface with a first magnitude at the central portion and a second greater magnitude at the lateral edge (for example, subject matter directed towards claims 47 and 55 in its present form).

Species IB directed a print mechanism, wherein the print surface passes through the printzone in a longitudinal direction, wherein the print surface has a central region and lateral edges and wherein airflow from the pressurized air source has a directional component away from the printzone with a first magnitude at the lateral edge and a second greater magnitude at the central region (for example, subject matter directed towards claims 48 and 56 in its present form).

Since applicant has received an action on the merits for the originally presented invention in species I, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 47-48 and 55-56 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

There was a request to reinstate previously withdrawn claims 47-48 and 55-56. The examiner will not currently reinstate these claims because they seem to represent two mutually exclusive species: IA directed to airflow which has a greater magnitude at the lateral edges than at the center portion and IB which has a greater magnitude at a central region than at the lateral edges. However, since the previously elected Species I directed to figure 4 is generic to both

Species IA and IB, both species IA and IB would be recombined in the event that generic species I became allowable.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 60 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 60 discloses "The method of claim 1, wherein the airflow is directed at the first surface prior to the first surface being engaged downstream of the printzone." It is not clear what is meant by the first surface "being engaged". How is the surface being engaged? There is a lack of antecedent basis for this "engaging" in claim 1. The applicant is required to specify exactly what is being engaged and how it is being engaged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 57 is rejected under 35 U.S.C. 102(b) as being anticipated by Smith (US Pat 5020244).

Smith discloses, with respect to claim 57, a printing mechanism (figure 1); a printhead configured to deposit fluid printing material upon a printing surface (figure 1, reference 4); a controller configured to generate control signals directing the operation of the printing mechanism (inherent); a pressurized air source creating an airflow configured such that the airflow is heated by heat emitted from the controller, wherein the pressurized air source is

configured to direct the heated airflow against the print surface (figure 1, reference 22, 26; abstract; column 1, lines 56-57)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1-5, 8-11, 14-17, 19, 22-23, 31, 34-38, 40-44, 46, 49-52, 54, 58-59, and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Pat 5020244).

Smith discloses:

- {claim 1} A method of operating an inkjet printing mechanism (figure 1); passing media through a printzone, the printzone including a support apparatus supporting the media thereat (figure 1, reference 2, 8); during the passing, applying print imaging by application of ink from an ink dispensing element and onto a first surface of the media (figure 1, reference 4); directing an airflow at the first surface, the airflow including a first directional component away from the printzone and a second directional component onto the first surface (figures 1-3, reference 17; abstract; column 1, lines 56-57)

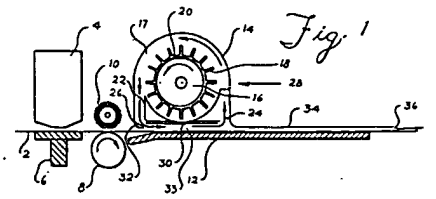


Fig. 1

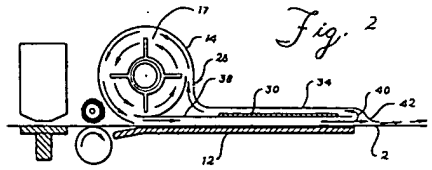


Fig. 2

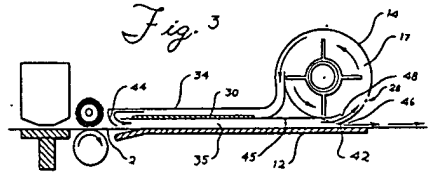
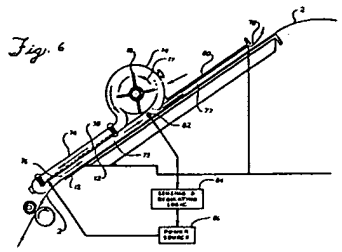


Fig. 3

- {claim 2} the airflow is directed from an elongate vent (figure 1, reference 22, 26)
- {claim 3} a length dimension of the elongate vent is generally transverse to a media feed direction of the media passing through the printzone (figures 1-3, reference 22, 26)
- {claim 4} the length dimension of the elongate vent is substantially coincident with a width of the printzone (figures 1-3, reference 22, 26)
- {claim 5} the airflow carries heat energy taken from a heat source (figure 1, reference 30; abstract)
- {claim 8} the airflow is provided from an elongate vent having a length dimension less than a width of the printzone (figure 1, reference 32)
- {claim 9} the airflow carries heat energy taken from a heat source otherwise producing waste heat energy (abstract)
- {claim 10} the waste heat energy originates from electronic control circuit components (figure 6, reference 86; column 5, lines 53-63; claim naturally suggested)



- {claim 11} the waste heat energy originates from motor components (naturally suggested in view of column 5, lines 41-46)
- {claim 14} the second directional component is of sufficient magnitude to maintain the media against the support surface in the printzone (figure 1, reference 34; column 1, lines 41-45; abstract)
- {claim 15} the second directional component is directed away from the printzone (figure 1, reference 26)
- {claim 16} the first directional component is substantially uniform across the media in a direction generally transverse to a feed direction of the media passing through the printzone (figure 1, reference 22, 26)
- {claim 17} the second directional component has a greater magnitude at a laterally-outermost portion of the media relative to a laterally-central portion of the media (figure 1, reference 26; when we consider laterally-central portion of media to be located at printhead)
- {claim 19} ink assist air knife (figure 1); a heat source (figure 1, reference 24, 26, 30); an air transport fluidly coupled to the heat source and moving the airflow therethrough (figure 1, reference 16); a conduit fluidly coupled to the air transport whereby the airflow as provided by the air transport passes through the conduit and exits a vent of the ink assist air knife as a heated airflow, with the vent being located relative to an inkjet printing mechanism having a printzone, the airflow as provided at the vent including directional components away from the printzone and sufficiently into media for stabilization thereof, the media having print imaging thereon as applied by the inkjet printing mechanism (figures 1-3, reference 22, 26; column 1, lines 56-57; since as seen in figure 2, airflow is directed in a downward direction, there is inherently a downward airflow

direction. Where there is a downward airflow component, there is inherently stabilization of the media.)

- {claim 22} An inkjet printing mechanism (figure 1); a printing system (figure 1, reference 2, 4, 8); an ink drying system including a heat source, an air transport, and an outlet vent, the air transport providing an airflow through the heat source, at the vent, and against the media with directional components at the outlet vent including a first component directed away from the printzone and a second component directed sufficiently into the media for stabilization thereof (figures 1-3, reference 16, 22, 26; column 1, lines 56-57; since as seen in figure 2, airflow is directed in a downward direction, there is inherently a downward airflow direction. Where there is a downward airflow component, there is inherently stabilization of the media.)
- {claim 23} the airflow promotes drying of the print imaging and maintains the media within a selected range of distance relative to the ink dispensing element by maintaining the media against the support apparatus (figure 1, reference 2; abstract; column 1, lines 41-45)
- {claim 31} An ink assist air knife (figure 1); heat energy supplying means (figure 1, reference 30); airflow producing means (figure 1, reference 16); airflow directing means for applying the airflow to print imaging with directional components of substantial magnitude into the print imaging so as to be sufficient to stabilize media whereat the print imaging is produced and bearing the print imaging and with directional components away from the printzone so as to not intersect the printzone whereat the print imaging is produced (figures 1-3, reference 16, 22, 24, 26; column 1, lines 56-57; since as seen in figure 2, airflow is directed in a downward direction, there is inherently a downward airflow direction. Where there is a downward airflow component, there is inherently stabilization of the media.)
- {claim 34} the airflow directing means include a vent located in an inkjet printing mechanism having a printzone, the airflow being provided at the vent,

the printzone defining a location at which the print imaging is formed (figure 1, reference 26)

- {claim 35} An inkjet printing mechanism (figure 1); print image applying means (figure 1, reference 4); airflow directing means for directing the airflow into the print imaging including directional components away from the printzone and sufficiently into the media to stabilize the media (figures 1-3, reference 16, 22, 26; column 1, lines 56-57; since as seen in figure 2, airflow is directed in a downward direction, there is inherently a downward airflow direction. Where there is a downward airflow component, there is inherently stabilization of the media.)
- {claim 36} the inkjet printer further comprises means for incorporating heat energy into the airflow (figure 1, reference 30)
- {claim 37} the airflow directing means includes an air knife vent (figure 1, reference 26)
- {claim 38} the air knife vent is stationary (figure 1, reference 26)
- {claim 40} An inkjet printing mechanism (figure 1); a print imaging device (figure 1, reference 4); an airflow directing device applying an airflow to the media including first directional components away from the printzone so as to not intersect the printzone and second directional components sufficiently toward the media to bear the media against a support apparatus of the printzone and thereby stabilize the media (figures 1-3, reference 16, 22, 24, 26; column 1, lines 56-57; since as seen in figure 2, airflow is directed in a downward direction, there is inherently a downward airflow direction. Where there is a downward airflow component, there is inherently stabilization of the media.)
- {claim 41} the airflow directing device is an air knife having an elongate slot located proximate the media and proximate the printzone whereby the second directional components maintain the media against the support surface when in the printzone (figure 1, reference 26)

- {claim 42} wherein the airflow is directed from a vent having an opening between the ink dispensing element and the first surface of the media (figure 2; air vent is beneath plane of printhead and above plane of media)
- {claim 43} wherein the media is passed through the printzone in a first direction and wherein the first directional component is in the first direction (figure 1, reference 26, 36)
- {claim 44} wherein the airflow is directed through a conduit extending towards the first surface and terminating at a vent proximate to and angularly facing the first surface (figure 1, reference 22, 26)
- {claim 46} varying a magnitude of the airflow across the first surface (figure 1, reference 26; direction of airflow varies at different points of surface; thus magnitude also varies)
- {claim 49} A printing mechanism (figure 1); a printhead configured to selectively eject fluid printing material onto a print surface in a printzone (figure 1, reference 4); a pressurized air source having an opening proximate the print surface and angularly facing away from printzone so as to direct pressurized air against the print surface to stabilize the print surface and such that pressurized air does not intersect the printzone (figure 1, reference 8, 26; abstract)
- {claim 50} wherein the airflow is directed from a vent having an opening between the printhead and the print surface (figure 2; air vent is beneath plane of printhead and above print surface plane)
- {claim 51} wherein the print surface is passed through the printzone in a first direction and wherein the opening angularly faces in the first direction (figure 1, reference 26, 36)
- {claim 52} wherein pressurized air is directed through a conduit extending towards the print surface and terminating at the opening (figure 1, reference 22, 26)

- {claim 54} varying a magnitude of the airflow across the print surface (figure 1, reference 26; direction of airflow caries at different points of surface; thus the magnitude varies)
- {claim 58} A printing mechanism (figure 1); a printhead configured to deposit a fluid printing material on a print surface (figure 1, reference 4); a pressurized air source having at least one vent opening proximate the print surface, wherein the pressurized air source is configured to create a first airflow having a first magnitude at a first lateral region of the print surface and a second airflow having a second distinct magnitude at a second distinct lateral region of the print surface (figure 1, reference 20, 26; if we define lateral regions to be sides that are being fed)
- {claim 59} A printing mechanism (figure 1); a printhead configured to deposit fluid printing material on a printing surface in a printzone (figure 1, reference 4); a support apparatus supporting the printing surface (figure 1, reference 8); and a pressurized air source configured to direct an airflow at the print surface such that the print surface is stabilized and such that the airflow does not create air turbulence at the print surface in the printzone (figure 1, reference 22, 26; abstract; column 1, lines 56-57)
- {claim 62} wherein the airflow is directed from a vent having an opening between the ink dispensing element and the first surface of the media (figure 2; air vent is beneath plane of printhead and above plane of media)

Smith differs from the claimed invention in that it does not explicitly disclose:

- {claim 1} the second directional component urging the media against the support apparatus in the printzone
- {claim 19} the airflow as provided at the vent including directional components away from the printzone and sufficiently into media for stabilization thereof within the printzone
- {claim 22} a second component directed sufficiently into the media for stabilization thereof within the printzone

- {claim 31} airflow directing means for applying the airflow to print imaging with directional components of substantial magnitude into the print imaging so as to be sufficient to stabilize media within a printzone
- {claim 35} airflow directing means for directing the airflow into the print imaging including directional components away from the printzone and sufficiently into the media to stabilize the media in the printzone
- {claim 40} an airflow directing device applying an airflow to the media including first directional components away from the printzone so as to not intersect the printzone and second directional components sufficiently toward the media to bear the media against a support apparatus of the printzone and thereby stabilize the media within the printzone
- {claim 49} a pressurized air source having an opening proximate the print surface and angularly facing away from printzone so as to direct pressurized air against the print surface to stabilize the print surface within the printzone and such that pressurized air does not intersect the printzone
- {claim 59} a pressurized air source configured to direct an airflow at the print surface such that the print surface is stabilized against the support apparatus in the printzone and such that the airflow does not create air turbulence at the print surface in the printzone

Smith discloses a roller 8 (figure 1) which can be construed as a support apparatus supporting the media at the printzone. In previous rejections using Smith, the platen 6 was interpreted as the support apparatus. Based on this interpretation, the examiner previously withdrew the rejection of Smith. However, upon reconsidering Smith in this new interpretation, the examiner believes that Smith is still appropriate to broadly read on the claimed invention. The applicant previously argued that roller 8 blocked the airflow 26 from urging the sheet against the platen 6, but this argument is now rendered moot. The examiner imagines that the applicant may argue that Smith still does not disclose urging the sheet against the support apparatus in the printzone because the airflow directing means is located downstream from the support apparatus 8. Even though the airflow blowing means is located downstream from the

printhead and supporting apparatus 8, it still secures the sheet against the support apparatus 8. Implicit evidence can be seen from the slight dip on the left side of guide 12. One of ordinary skill in the art knows that this dip is to help account for the downward pressure on support roller 8. Thus, It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Smith. The motivation for the skilled artisan in doing so is to gain the benefit of providing an enhanced drying apparatus and method which optimizes air velocity relative to a medium surface. The combination naturally suggests:

- {claim 1} the second directional component urging the media against the support apparatus in the printzone
- {claim 19} the airflow as provided at the vent including directional components away from the printzone and sufficiently into media for stabilization thereof within the printzone
- {claim 22} a second component directed sufficiently into the media for stabilization thereof within the printzone
- {claim 31} airflow directing means for applying the airflow to print imaging with directional components of substantial magnitude into the print imaging so as to be sufficient to stabilize media within a printzone
- {claim 35} airflow directing means for directing the airflow into the print imaging including directional components away from the printzone and sufficiently into the media to stabilize the media in the printzone
- {claim 40} an airflow directing device applying an airflow to the media including first directional components away from the printzone so as to not intersect the printzone and second directional components sufficiently toward the media to bear the media against a support apparatus of the printzone and thereby stabilize the media within the printzone
- {claim 49} a pressurized air source having an opening proximate the print surface and angularly facing away from printzone so as to direct pressurized air against the print surface to stabilize the print surface within the printzone and such that pressurized air does not intersect the printzone

- {claim 59} a pressurized air source configured to direct an airflow at the print surface such that the print surface is stabilized against the support apparatus in the printzone and such that the airflow does not create air turbulence at the print surface in the printzone

Claims 6-7, 20-21, 29-30, and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Pat 5020244) in view of Martinengo (US Pat 5495275).

Smith discloses:

- {claim 6} A method (as applied to claim 5)
- {claim 7} electronic control circuit components serving also to support operation of an inkjet printer (column 5, lines 36-63)
- {claim 20} an ink assist air knife (as applied to claim 20)
- {claim 21} control components serving also to support operation of the inkjet printing mechanism (column 5, lines 36-63)
- {claim 29} an inkjet printing mechanism (as applied to claim 22)
- {claim 30} electronic control components directing operation of the inkjet printing mechanism (column 5, lines 36-63)
- {claim 32} an ink assist air knife (as applied to claim 31)
- {claim 33} the resistive elements include electronic control component means for supporting operation of an inkjet printing mechanism means fro producing the print imaging (column 5, lines 36-63)

Smith differs from the claimed invention in that it does not disclose:

- {claim 6} the heat source includes resistive elements carrying electrical current therethrough and having resistance thereto sufficient to produce elevated temperature in the airflow as the heat energy carried by the airflow moving therepast
- {claim 20} the heat source comprises electrically conductive elements offering resistance to electrical current passing therethrough

- {claim 29} the heat source comprises electric components offering resistance to electrical current passing therethrough
- {claim 32} the heat energy supplying means comprises electric component means for offering resistance to electrical current passing therethrough

Martinengo discloses:

- {claim 6} the heat source includes resistive elements carrying electrical current therethrough and having resistance thereto sufficient to produce elevated temperature in the airflow as the heat energy carried by the airflow moving therepast (column 6, lines 24-27)
- {claim 20} the heat source comprises electrically conductive elements offering resistance to electrical current passing therethrough (column 6, lines 24-27)
- {claim 29} the heat source comprises electric components offering resistance to electrical current passing therethrough (column 6, lines 24-27)
- {claim 32} the heat energy supplying means comprises electric component means for offering resistance to electrical current passing therethrough (column 6, lines 24-27)

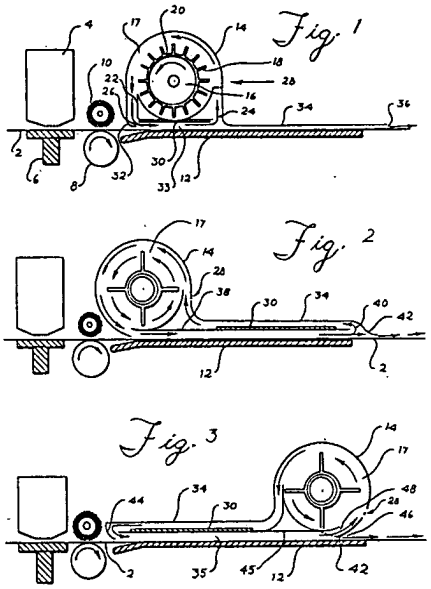
It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Martinengo into the invention of Smith. The motivation for the skilled artisan in doing so is to gain the benefit applying voltage to the heating element so that temperature can be raised and heating can be properly performed (column 6, lines 24-27).

Claim 1-5, 8-11, 14-17, 19, 22-23, 31, 34-38, 40-44, 46, 49-52, 54, 58-59, and 61-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Pat 5020244) in view of Rezanka et al (US Pat 5371531).

Smith discloses:

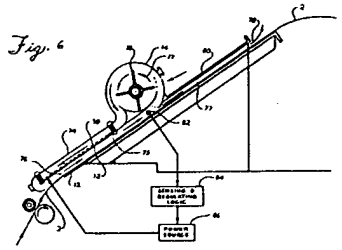
- {claim 1} A method of operating an inkjet printing mechanism (figure 1); passing media through a printzone, the printzone including a support apparatus supporting the media thereat (figure 1, reference 2, 8); during the passing,

applying print imaging by application of ink from an ink dispensing element and onto a first surface of the media (figure 1, reference 4); directing an airflow at the first surface, the airflow including a first directional component away from the printzone and a second directional component onto the first surface (figures 1-3, reference 17; abstract; column 1, lines 56-57)



- {claim 2} the airflow is directed from an elongate vent (figure 1, reference 22, 26)
- {claim 3} a length dimension of the elongate vent is generally transverse to a media feed direction of the media passing through the printzone (figures 1-3, reference 22, 26)
- {claim 4} the length dimension of the elongate vent is substantially coincident with a width of the printzone (figures 1-3, reference 22, 26)
- {claim 5} the airflow carries heat energy taken from a heat source (figure 1, reference 30; abstract)
- {claim 8} the airflow is provided from an elongate vent having a length dimension less than a width of the printzone (figure 1, reference 32)
- {claim 9} the airflow carries heat energy taken from a heat source otherwise producing waste heat energy (abstract)

- {claim 10} the waste heat energy originates from electronic control circuit components (figure 6, reference 86; column 5, lines 53-63; claim naturally suggested)



- {claim 11} the waste heat energy originates from motor components (naturally suggested in view of column 5, lines 41-46)
- {claim 14} the second directional component is of sufficient magnitude to maintain the media against the support surface in the printzone (figure 1, reference 34; column 1, lines 41-45; abstract)
- {claim 15} the second directional component is directed away from the printzone (figure 1, reference 26)
- {claim 16} the first directional component is substantially uniform across the media in a direction generally transverse to a feed direction of the media passing through the printzone (figure 1, reference 22, 26)
- {claim 17} the second directional component has a greater magnitude at a laterally-outermost portion of the media relative to a laterally-central portion of the media (figure 1, reference 26; when we consider laterally-central portion of media to be located at printhead)
- {claim 19} ink assist air knife (figure 1); a heat source (figure 1, reference 24, 26, 30); an air transport fluidly coupled to the heat source and moving the airflow therethrough (figure 1, reference 16); a conduit fluidly coupled to the air transport whereby the airflow as provided by the air transport passes through the conduit and exits a vent of the ink assist air knife as a heated airflow, with the vent being located relative to an inkjet printing mechanism having a printzone, the airflow as provided at the vent including directional components away from

the printzone and sufficiently into media for stabilization thereof, the media having print imaging thereon as applied by the inkjet printing mechanism (figures 1-3, reference 22, 26; column 1, lines 56-57; since as seen in figure 2, airflow is directed in a downward direction, there is inherently a downward airflow direction. Where there is a downward airflow component, there is inherently stabilization of the media.)

- {claim 22} An inkjet printing mechanism (figure 1); a printing system (figure 1, reference 2, 4, 8); an ink drying system including a heat source, an air transport, and an outlet vent, the air transport providing an airflow through the heat source, at the vent, and against the media with directional components at the outlet vent including a first component directed away from the printzone and a second component directed sufficiently into the media for stabilization thereof (figures 1-3, reference 16, 22, 26; column 1, lines 56-57; since as seen in figure 2, airflow is directed in a downward direction, there is inherently a downward airflow direction. Where there is a downward airflow component, there is inherently stabilization of the media.)
- {claim 23} the airflow promotes drying of the print imaging and maintains the media within a selected range of distance relative to the ink dispensing element by maintaining the media against the support apparatus (figure 1, reference 2; abstract; column 1, lines 41-45)
- {claim 31} An ink assist air knife (figure 1); heat energy supplying means (figure 1, reference 30); airflow producing means (figure 1, reference 16); airflow directing means for applying the airflow to print imaging with directional components of substantial magnitude into the print imaging so as to be sufficient to stabilize media whereat the print imaging is produced and bearing the print imaging and with directional components away from the printzone so as to not intersect the printzone whereat the print imaging is produced (figures 1-3, reference 16, 22, 24, 26; column 1, lines 56-57; since as seen in figure 2, airflow is directed in a downward direction, there is inherently a downward airflow

direction. Where there is a downward airflow component, there is inherently stabilization of the media.)

- {claim 34} the airflow directing means include a vent located in an inkjet printing mechanism having a printzone, the airflow being provided at the vent, the printzone defining a location at which the print imaging is formed (figure 1, reference 26)
- {claim 35} An inkjet printing mechanism (figure 1); print image applying means (figure 1, reference 4); airflow directing means for directing the airflow into the print imaging including directional components away from the printzone and sufficiently into the media to stabilize the media (figures 1-3, reference 16, 22, 26; column 1, lines 56-57; since as seen in figure 2, airflow is directed in a downward direction, there is inherently a downward airflow direction. Where there is a downward airflow component, there is inherently stabilization of the media.)
- {claim 36} the inkjet printer further comprises means for incorporating heat energy into the airflow (figure 1, reference 30)
- {claim 37} the airflow directing means includes an air knife vent (figure 1, reference 26)
- {claim 38} the air knife vent is stationary (figure 1, reference 26)
- {claim 40} An inkjet printing mechanism (figure 1); a print imaging device (figure 1, reference 4); an airflow directing device applying an airflow to the media including first directional components away from the printzone so as to not intersect the printzone and second directional components sufficiently toward the media to bear the media against a support apparatus of the printzone and thereby stabilize the media (figures 1-3, reference 16, 22, 24, 26; column 1, lines 56-57; since as seen in figure 2, airflow is directed in a downward direction, there is inherently a downward airflow direction. Where there is a downward airflow component, there is inherently stabilization of the media.)

- {claim 41} the airflow directing device is an air knife having an elongate slot located proximate the media and proximate the printzone whereby the second directional components maintain the media against the support surface when in the printzone (figure 1, reference 26)
- {claim 42} wherein the airflow is directed from a vent having an opening between the ink dispensing element and the first surface of the media (figure 2; air vent is beneath plane of printhead and above plane of media)
- {claim 43} wherein the media is passed through the printzone in a first direction and wherein the first directional component is in the first direction (figure 1, reference 26, 36)
- {claim 44} wherein the airflow is directed through a conduit extending towards the first surface and terminating at a vent proximate to and angularly facing the first surface (figure 1, reference 22, 26)
- {claim 46} varying a magnitude of the airflow across the first surface (figure 1, reference 26; direction of airflow varies at different points of surface; thus magnitude also varies)
- {claim 49} A printing mechanism (figure 1); a printhead configured to selectively eject fluid printing material onto a print surface in a printzone (figure 1, reference 4); a pressurized air source having an opening proximate the print surface and angularly facing away from printzone so as to direct pressurized air against the print surface to stabilize the print surface and such that pressurized air does not intersect the printzone (figure 1, reference 8, 26; abstract)
- {claim 50} wherein the airflow is directed from a vent having an opening between the printhead and the print surface (figure 2; air vent is beneath plane of printhead and above print surface plane)
- {claim 51} wherein the print surface is passed through the printzone in a first direction and wherein the opening angularly faces in the first direction (figure 1, reference 26, 36)

- {claim 52} wherein pressurized air is directed through a conduit extending towards the print surface and terminating at the opening (figure 1, reference 22, 26)
- {claim 54} varying a magnitude of the airflow across the print surface (figure 1, reference 26; direction of airflow caries at different points of surface; thus the magnitude varies)
- {claim 58} A printing mechanism (figure 1); a printhead configured to deposit a fluid printing material on a print surface (figure 1, reference 4); a pressurized air source having at least one vent opening proximate the print surface, wherein the pressurized air source is configured to create a first airflow having a first magnitude at a first lateral region of the print surface and a second airflow having a second distinct magnitude at a second distinct lateral region of the print surface (figure 1, reference 20, 26; if we define lateral regions to be sides that are being fed)
- {claim 59} A printing mechanism (figure 1); a printhead configured to deposit fluid printing material on a printing surface in a printzone (figure 1, reference 4); a support apparatus supporting the printing surface (figure 1, reference 8); and a pressurized air source configured to direct an airflow at the print surface such that the print surface is stabilized and such that the airflow does not create air turbulence at the print surface in the printzone (figure 1, reference 22, 26; abstract; column 1, lines 56-57)
- {claim 62} wherein the airflow is directed from a vent having an opening between the ink dispensing element and the first surface of the media (figure 2; air vent is beneath plane of printhead and above plane of media)

Smith differs from the claimed invention in that it does not explicitly disclose:

- {claim 1} the second directional component urging the media against the support apparatus in the printzone

- {claim 19} the airflow as provided at the vent including directional components away from the printzone and sufficiently into media for stabilization thereof within the printzone
- {claim 22} a second component directed sufficiently into the media for stabilization thereof within the printzone
- {claim 31} airflow directing means for applying the airflow to print imaging with directional components of substantial magnitude into the print imaging so as to be sufficient to stabilize media within a printzone
- {claim 35} airflow directing means for directing the airflow into the print imaging including directional components away from the printzone and sufficiently into the media to stabilize the media in the printzone
- {claim 40} an airflow directing device applying an airflow to the media including first directional components away from the printzone so as to not intersect the printzone and second directional components sufficiently toward the media to bear the media against a support apparatus of the printzone and thereby stabilize the media within the printzone
- {claim 49} a pressurized air source having an opening proximate the print surface and angularly facing away from printzone so as to direct pressurized air against the print surface to stabilize the print surface within the printzone and such that pressurized air does not intersect the printzone
- {claim 59} a pressurized air source configured to direct an airflow at the print surface such that the print surface is stabilized against the support apparatus in the printzone and such that the airflow does not create air turbulence at the print surface in the printzone
- {claim 61} the airflow is directed at the first surface and at the support apparatus underlying the first surface

Rezanka et al discloses a belt 40 which serves as a support for printheads 42 and 46, as well as dryers 52 and 54.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the platen, roller, guide support structure of Smith with the belt support structure of Rezanka et al. The motivation for the skilled artisan in doing so is to gain the benefit of having one continuous support structure more easily transport a sheet without the wear and tear caused by a transport roller. The combination naturally suggests:

- {claim 1} the second directional component urging the media against the support apparatus in the printzone
- {claim 19} the airflow as provided at the vent including directional components away from the printzone and sufficiently into media for stabilization thereof within the printzone
- {claim 22} a second component directed sufficiently into the media for stabilization thereof within the printzone
- {claim 31} airflow directing means for applying the airflow to print imaging with directional components of substantial magnitude into the print imaging so as to be sufficient to stabilize media within a printzone
- {claim 35} airflow directing means for directing the airflow into the print imaging including directional components away from the printzone and sufficiently into the media to stabilize the media in the printzone
- {claim 40} an airflow directing device applying an airflow to the media including first directional components away from the printzone so as to not intersect the printzone and second directional components sufficiently toward the media to bear the media against a support apparatus of the printzone and thereby stabilize the media within the printzone
- {claim 49} a pressurized air source having an opening proximate the print surface and angularly facing away from printzone so as to direct pressurized air against the print surface to stabilize the print surface within the printzone and such that pressurized air does not intersect the printzone
- {claim 59} a pressurized air source configured to direct an airflow at the print surface such that the print surface is stabilized against the support apparatus in

the printzone and such that the airflow does not create air turbulence at the print surface in the printzone

- {claim 61} the airflow is directed at the first surface and at the support apparatus underlying the first surface

Claims 6-7, 20-21, 29-30, and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Pat 5020244) in view of Rezanka et al (US Pat 5371531), as applied to claims 1-5, 8-11, 14-17, 19, 22-23, 31, 34-38, 40-44, 46, 49-52, 54, 58-59, and 61-62, and further in view of Martinengo (US Pat 5495275).

Smith, as modified, discloses:

- {claim 6} A method (as applied to claim 5)
- {claim 7} electronic control circuit components serving also to support operation of an inkjet printer (column 5, lines 36-63)
- {claim 20} an ink assist air knife (as applied to claim 20)
- {claim 21} control components serving also to support operation of the inkjet printing mechanism (column 5, lines 36-63)
- {claim 29} an inkjet printing mechanism (as applied to claim 22)
- {claim 30} electronic control components directing operation of the inkjet printing mechanism (column 5, lines 36-63)
- {claim 32} an ink assist air knife (as applied to claim 31)
- {claim 33} the resistive elements include electronic control component means for supporting operation of an inkjet printing mechanism means fro producing the print imaging (column 5, lines 36-63)

Smith, as modified, differs from the claimed invention in that it does not disclose:

- {claim 6} the heat source includes resistive elements carrying electrical current therethrough and having resistance thereto sufficient to produce elevated temperature in the airflow as the heat energy carried by the airflow moving therepast

- {claim 20} the heat source comprises electrically conductive elements offering resistance to electrical current passing therethrough
- {claim 29} the heat source comprises electric components offering resistance to electrical current passing therethrough
- {claim 32} the heat energy supplying means comprises electric component means for offering resistance to electrical current passing therethrough

Martinengo discloses:

- {claim 6} the heat source includes resistive elements carrying electrical current therethrough and having resistance thereto sufficient to produce elevated temperature in the airflow as the heat energy carried by the airflow moving therepast (column 6, lines 24-27)
- {claim 20} the heat source comprises electrically conductive elements offering resistance to electrical current passing therethrough (column 6, lines 24-27)
- {claim 29} the heat source comprises electric components offering resistance to electrical current passing therethrough (column 6, lines 24-27)
- {claim 32} the heat energy supplying means comprises electric component means for offering resistance to electrical current passing therethrough (column 6, lines 24-27)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Martinengo into the invention of modified Smith. The motivation for the skilled artisan in doing so is to gain the benefit applying voltage to the heating element so that temperature can be raised and heating can be properly performed (column 6, lines 24-27).

Allowable Subject Matter

Claims 18, 45 and 53 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 18 discloses "the first directional component varies across the media in a direction generally transverse to a direction of the media passing through the printzone," which was not found, taught, or disclosed in the prior arts.

Claim 45 discloses "wherein the ink dispensing element is provided by a printhead at a first end of a cartridge having a second opposite end, wherein the conduit extends from the first end to the second end," which was not found, taught, or disclosed in the prior arts.

Claim 53 discloses "a cartridge providing the printhead at a first end having a second opposite end, wherein the conduit extends from the first end to the second end," which was not found, taught, or disclosed in the prior arts.

Response to Arguments

Applicant's arguments with respect to claims 1-11, 14-23, 29-38, and 40-59 have been considered but are moot in view of the new ground(s) of rejection. However, the applicant will notice that some responses are placed in the above rejections. The applicant will also note that two rejections are now made. For the rejection regarding Smith in view of Rezanka et al, the applicant will notice that in light of the combination, the applicant's previous arguments are now rendered moot.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mizutani et al (US Pat 6439712) discloses an ink liquid fixing device and ink jet recording apparatus provided with such ink liquid fixing device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S Liang whose telephone number is (571) 272-2148. The examiner can normally be reached on 8:30-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Stephen D. Meier
Primary Examiner